

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-36. (Canceled)

37. (Previously amended) An assembly of particles comprising a plurality of types of particles, wherein each particle is from 10 nm to 50  $\mu\text{m}$  in length and is comprised of a plurality of segments, and wherein at least one of said types is differentiable from another of said types based on the sequence of said segments.

38. (Canceled)

39. (Previously amended) The assembly of particles of claim 37 wherein at least one of said types is differentiable from another of said types by optical means, electrical means, physical means, chemical means or magnetic means.

40. (Previously amended) The assembly of particles of claim 39 wherein at least one of said types is differentiable from another of said types by optical means.

41. (Previously amended) The assembly of particles of claim 40 wherein at least one of said types is differentiable from another of said types by differential reflectivity.

42. (Original) The assembly of particles of claim 37 wherein each said particle comprises 2 to 50 segments, and wherein the length of each particle is from 1 to 15  $\mu\text{m}$ , the width of each particle is from 30 nm to 2  $\mu\text{m}$ , and the segment lengths are from 50 nm to 10  $\mu\text{m}$ .

43. (Original) The assembly of particles of claim 37 comprising functionalized particles.
44. (Previously amended) The assembly of particles of claim 43 comprising at least one type that is differently functionalized from another type.
45. (Original) The assembly of particles of claim 43 wherein said functionalization comprises an organic substance, an inorganic substance, an inorganic coordination complex and/or an organometallic complex.
46. (Original) The assembly of particles of claim 43 wherein said functionalization comprises a detectable tag or a material which will bind a detectable tag.
47. (Original) The assembly of particles of claim 46 wherein said detectable tag is selected from the group consisting of: a fluorescent tag, an isotopic tag, a radioactive tag, a particulate tag, an oligonucleotide-based tag, a molecular tag, a Raman-based tag, an infrared tag, a mass spectrometric tag, and an electrochemical tag.

48-54. (Canceled)

55. (Previously amended) An assembly of rod-shaped particles comprising a plurality of types of particles, wherein each particle has at least one dimension greater than about 10 nm and less than 10  $\mu$ m, and wherein at least one of said types is differentiable from another of said types and is made by a process having different synthesis parameters from those of another of said types.
56. (Original) The assembly of particles of claim 55 wherein each particle has at least one dimension less than 500 nm.

57. (Original) The assembly of particle of claim 55 wherein each particle has at least one dimension less than 200 nm.
58. (Original) The assembly of particles of claim 55 comprising at least 3 types of particles.
59. (Original) The assembly of particles of claim 55 comprising at least 5 types of particles.
60. (Previously amended) The assembly of particles of claim 55 wherein at least one of said types is differentiable from another of said types based on differences in particle length, width, shape and/or composition.
61. (Original) The assembly of particles of claim 55 comprising functionalized particles.
62. (Previously amended) The assembly of particles of claim 61 comprising at least one type that is differently functionalized from another type.
63. (Original) The assembly of particles of claim 61 wherein said functionalization comprises an organic substance, an inorganic substance, an inorganic coordination complex and/or an organometallic complex.
64. (Original) The assembly of particles of claim 61 wherein said functionalization comprises a detectable tag or a material which will bind a detectable tag.
- 65-86. (Canceled)
87. (Previously added) An assembly of particles comprising a plurality of each of a plurality of types of encoded particles, wherein each particle is from 10 nm to 50  $\mu\text{m}$

in length and is comprised of a plurality of segments, and wherein at least one of said types is differentiable from another of said types based on said encoding.

88. (Previously added) The assembly of particles of claim 87 wherein said types are differentiable by at least one of optical means, electrical means, physical means, chemical means and magnetic means.
89. (Previously added) The assembly of particles of claim 88 wherein said types are differentiable by differential reflectivity.
90. (Previously added) The assembly of particles of claim 87 wherein each particle comprises 2 to 50 segments, and wherein the length of each particle is from 1 to 15  $\mu\text{m}$ , the width of each particle is from 30 nm to 2  $\mu\text{m}$ , and the segment lengths are from 50 nm to 10  $\mu\text{m}$ .
91. (Previously added) The assembly of particles of claim 87 comprising functionalized particles.
92. (Previously added) The assembly of particles of claim 91 comprising types of particles differently functionalized from other types of particles.
93. (Previously added) The assembly of particles of claim 91 wherein said functionalization comprises at least one of an organic substance, an inorganic substance, an inorganic coordination complex, and an organometallic complex.
94. (Previously added) The assembly of particles of claim 91 wherein said functionalization comprises at least one of a detectable tag and a material that can bind a detectable tag.

95. (Previously added) The assembly of particles of claim 94 wherein said detectable tag comprises at least one of a fluorescent tag, an isotopic tag, a radioactive tag, a particulate tag, an oligonucleotide-based tag, a molecular tag, a Raman-based tag, an infrared tag, a mass spectrometric tag, and an electrochemical tag.
96. (Previously added) An assembly of particles comprising a plurality of types of particles, wherein each particle is from 10 nm to 50  $\mu$ m in length and has a striping pattern, and wherein at least one of said types is differentiable from another of said types based on said striping pattern.
97. (Previously added) The assembly of particles of claim 96 wherein said types are differentiable by at least one of optical means, electrical means, physical means, chemical means and magnetic means.
98. (Previously added) The assembly of particles of claim 97 wherein said types are differentiable by differential reflectivity.
99. (Previously added) The assembly of particles of claim 96 wherein each particle comprises 2 to 50 segments, and wherein the length of each particle is from 1 to 15  $\mu$ m, the width of each particle is from 30 nm to 2  $\mu$ m, and the segment lengths are from 50 nm to 10  $\mu$ m.
100. (Previously added) The assembly of particles of claim 96 comprising functionalized particles.
101. (Previously added) The assembly of particles of claim 100 comprising types of particles differently functionalized from other types of particles.
102. (Previously added) The assembly of particles of claim 100 wherein said functionalization comprises at least one of an organic substance, an

inorganic substance, an inorganic coordination complex, and an organometallic complex.

103. (Previously added) The assembly of particles of claim 100 wherein said functionalization comprises at least one of a detectable tag and a material that can bind a detectable tag.

104. (Previously added) The assembly of particles of claim 103 wherein said detectable tag comprises at least one of a fluorescent tag, an isotopic tag, a radioactive tag, a particulate tag, an oligonucleotide-based tag, a molecular tag, a Raman-based tag, an infrared tag, a mass spectrometric tag, and an electrochemical tag.